1. REPORT DATE **OCT 2006**	2. REPORT TYPE	3. DATES COVERED **00-00-2006 to 00-00-2006**

4. TITLE AND SUBTITLE **Leadership, The Final Frontier: Lessons From the Captains of Star Trek**	5a. CONTRACT NUMBER
	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **309 SMXG/520 SMXS,7278 4th ST,Hill AFB,UT,84056**	8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**3**	

Leadership, The Final Frontier:
Lessons From the Captains of Star Trek

Paul Kimmerly

Marine Corps Technology Services Organization

David R. Webb

309 Software Maintenance Group, Hill Air Force Base

Leadership, the final frontier. These are the examples of the Star Trek *captains whose mission was to seek out new methods, to teach management lessons, and to boldly lead where few managers have gone before. Invisible forces, alien invaders, and magnetic storms are all common challenges to the captains of the various ships in the* Star Trek *universe. Managers face their equivalents every day and, while it might be desirable to have Scotty beam you out of danger, it is never that simple. However, managers can learn lessons from the* Star Trek *captains and how they dealt with different situations. The authors look at the advantages and disadvantages in the approaches used by each* Star Trek *captain and how managers can use the lessons taught by the captains.*

As the other articles in this issue of CROSSTALK illustrate, the various *Star Trek* series affected more than their legions of devoted fans. The shows inspired technological developments and taught lessons in diversity and diplomacy. To do that, the shows need(ed) strong central characters that audiences can believe. Foremost among the characters were the five starship captains. Each of them had unique challenges, personalities, and approaches to managing their ships. The individual captains brought different styles to their commands, and each of their styles provided examples and lessons for managers in today's world. Let us look at each of the captains in detail and in chronological order as they appeared on our television screens.

James T. Kirk

The first captain to appear on *Star Trek* was an energetic, hands-on leader. He led every crew excursion to new planets and took an active role in all interactions with new civilizations. Captain Kirk also relied heavily on his crew, especially his science officer, chief engineer, and doctor. He pushed them all to succeed but depended on their counsel to help him make decisions. His crew knew who was in charge, but responded to his call for their input and did their best to answer his needs. From Captain Kirk, managers can learn the power of involving and empowering their staff.

Captain Kirk had one talent unmatched by any of the other captains: No one handled being struck by an invisible force like James T. Kirk. Whether it was an energy blow, a psychic blow or some other kind of unseen force, Captain Kirk might double over in pain, but he would push through it to complete his mission. Managers find themselves assaulted by unexpected unseen forces. These forces often cause pain and impact on schedules, staffing, and quality. Like Captain Kirk, managers must find a way through unanticipated problems to reach their goals.

Staffing issues can become major problems for managers. Managers need to ensure that the right people fill the right roles in an organization. Sometimes this includes subordinate managers. In the software world, it is not uncommon to promote an outstanding technician into a management position because they have reached the top of their technical pay scale. While a person may have outstanding technical skills, they may not make a good manager. Captain Kirk had to deal with outbursts from Dr. McCoy that all came down to something like, *Darn it, Jim! I'm a doctor, not a (insert occupation).* Organizations may find themselves hearing the same thing from newly promoted managers. Just as Captain Kirk had to lead Dr. McCoy through those difficult situations, organizations need to mentor new managers through the learning curve of their positions.

The downside to Kirk's method is that his total *hands-on* approach created a management bottleneck – everything had to funnel through Kirk. As McCoy told him in the first movie, *You're pushing, Jim. Your people know their jobs.* The Kirk approach, then, would not work in a diverse environment where workers need to be more autonomous. The Kirk method is more appropriate in a tight, geographically identical team with a culture of strong leadership.

Jean-Luc Picard

Captain Picard commanded a new version of the same starship as Captain Kirk and led with a different style. Captain Picard was a more stoic commander. While he showed humor and compassion at times, he clearly held the position of authority on his ship. His approach made use of his resources in a different way than Captain Kirk. Captain Picard would send an away team to any encounters on new planets.

His crew entered the dangerous situations and explorations. They would relay information to the ship where Picard could lead them based on what they provided. Picard showed managers how to gather and use data better than any other *Star Trek* captain. He would collect the data from his away team and then issue an order to *make it so*. That is not to say that Picard was uninvolved. He allowed his people to explore and deal with situations, but he always stayed informed and would act when the time was right. He was less likely to jump into a situation the way that Captain Kirk would but used his staff and information to their best potential.

In opposition to the weakness of Kirk's approach, Picard's *hands-off* approach also had a drawback: While he allowed his staff to stretch and grow and handle all the issues they could on their own, he often kept vital information to himself. From time to time, this created a sense of confusion in the crew as to the captain's intents. Leadership using the Picard style, therefore, is best suited to a large, process-centric, either geographically identical or diverse team, and requires strong communication skills from leadership.

Benjamin Sisco

The commander of the Deep Space Nine base found himself isolated from the mainstream of the Federation and was forced to deal with warring factions. Placed between the Cardassians and Bajorans, Sisco had to be well versed in diplomacy. Taking over the base from the Cardassians, Sisco dealt with the transition from the old rule to the new Bajoran independence. Managers can find themselves in this same situation as projects change over time. It is not unusual for existing software projects to convert to a new technology. This often means starting a project within a project. The old guard and the new project compete for the same

resources and the same attention from the project manager. That manager could learn a lot from the way Sisco balanced the needs of the new Bajoran majority with the needs of the withdrawing Cardassians. Both the new project and the old project need the manager's attention. The old project needs to be assured that its work still has value to the organization while the new project needs the manager's assistance in getting established. The project planning and management knowledge that made the old project successful should be applied to the new project. Doing this ensures that the new project has some structure to its efforts. It also helps to open a communication line between the two projects to ensure the new group learns from the existing group and carries successful approaches forward into the new effort.

Managers who find themselves isolated like Commander Sisco can use that to their advantage by trying new things that may not be as easy to try from the middle of a large corporate structure like the Federation. Managers must keep the organization's goals, objectives, and policies in mind when trying new things, but they also need to experiment and try new methods to fit changing situations. What worked for them before may not work with the next challenge. They must be open to new ideas.

Thrust into the situation at Deep Space Nine, Commander Sisco had a Bajoran as one of his key staff members. Her insight into the problems of her people and their needs helped him in his efforts to manage the situations he faced. Similarly, managers will usually find that the best ideas will come from their staff. Managers should look for opportunities to gather ideas from the staff. The people who perform the day-to-day functions of a project know what works best and what needs improvement. Managers should take every opportunity to get their input.

Most of us who have taken over leadership of a software team can probably identify with Sisco. His greatest weakness was also the source of his greatest strength: inexperience. He was forced to bring order to individuals from diverse groups that brought different skills and biases to the team. As a new leader, he entered the situation with no preconceived notions that could hinder his

efforts. Sisco's lessons learned, then, would best be applied to a radically diverse group working in an uncertain environment. A good example would be an integrated project team made up of individuals from different areas within an organization who are brought together to start a new project. The project manager of such a group should always be willing to try new ideas and think outside the station.

Catherine Janeway

The captain of the Voyager faced a unique situation in the *Star Trek* world. She found her ship and crew mysteriously transported across the galaxy to uncharted space. Her mission was to find a way home. Managers of new projects within an organization can feel this same way. This is especially true if the project is something new that the organization has never tried before. In the

> *"The people who perform the day-to-day functions of a project know what works best and needs improvement. Managers should take every opportunity to get their input."*

software world, this often happens with new development projects using new technology. Managers are forced to set their own direction. These projects usually depend on experts in the new technology. Their opinion often drives the course of the project. Managers need to focus this knowledge and expert opinion to meet the project's needs. Captain Janeway relied on the expertise of her crew to deal with resource shortages, equipment needs, and unexpected challenges. She pushed the creativity of her staff to deal with problems. Managers of new projects need to encourage and foster creativity. This will help them find their way to a successful outcome, as the creativity of Captain Janeway's crew helped them find their way home.

While Janeway's style may work for other kinds of teams, it is best when directed specifically to small, maneuver-

able teams. This style, while effective at uniting a small group of individuals to achieve a common goal, may not apply to larger groups.

Jonathan Archer

Chronologically, Captain Archer was the first *Star Trek* captain. He set out on the first Enterprise years before Captain Kirk. Archer faced a number of challenges similar to those of Captain Janeway. While his mission was more clearly defined, he was the first human captain to set out in a starship. He made a number of the rules that the later captains followed. Managers of projects dealing with new technology find themselves in this situation. New, cutting-edge technologies become stable, old technologies. The lessons learned in the first projects with new technologies were vitally important to future successes. All of the captains kept a log that contained their lessons learned in both success and failure. None of these logs was more important that Archer's. He set the standards for the captains that followed. New project managers do the same. Keeping track of their project's challenges and successes, they set the standard for future project managers.

Captain Archer had help in facing his mission of exploring intergalactic space for the first time. The Vulcans were long-time explorers that offered their assistance to the fledgling human explorers. Organizations have managers with project experience. The organization should use these managers to mentor the new projects. If an organization has an established process improvement program, it is likely that there will be lessons learned data from past projects. A process improvement group can also serve the Vulcan role in assisting the new project as it enters the unknown. New project managers should not be hesitant to ask for help. That is what the process improvement group and the lessons learned from past projects are intended to provide.

With even less experience behind him than Benjamin Sisco, Captain Archer was a true pioneer. His lessons learned can be directly applied to new projects taking on brand new work or using new technologies and processes. Team leaders experimenting with Capability Maturity Model® Integration, Team Software Process℠, Agile or other methodologies could rely upon Archer's approach as they blaze a new trail. As with Captain Janeway's method, however, this approach works best in a small, focused team and may break down in a

larger, more diverse group.

All Captains

As a group, the captains dealt with unexpected encounters, crew problems, and planetary governments. In a manager's world, these equate to changes, staffing, and customers. All of these issues require decision-making skills and information to help make decisions. The captains can teach lessons in all these areas.

Change is a regular part of a manager's world today. Sometimes, even with the best information, it is difficult for a manager to know how to deal with unexpected and changing situations. When the *Star Trek* captains encountered something unexpected, they put up their ships' shields. Managers often put up their shields when change comes their way, but they should remain open to any situation and not merely dig in defensively. The *Star Trek* captains always reacted cautiously, but they also opened communication channels immediately. Rather than react to changing situations, the captains used open communication to gather information about a situation and determine how to proceed. They realized that not every unexpected encounter or changing situation presented danger; sometimes these situations provided opportunities. Managers can learn that change can enable improvement and innovation.

When it came to dealing with different groups within their crews or from planetary civilizations, the *Star Trek* captains needed to practice diplomacy. Even the more action oriented captains like Kirk and Archer had to learn to negotiate and bring groups together. In organizations, managers deal with customers, both outside the organization and inside other departments within the organization. The *Star Trek* captains provided good examples of when to take a stand and when to work on a mutually satisfactory solution. To guide their actions, all of the captains following Captain Archer had orders to stay within the *Prime Directive*. This Star Fleet edict requires the captains to avoid interfering in the social and technological evolution of any planet and civilization that they meet. For organizations, this shows the importance of establishing a set of goals, objectives, and policies. Guiding principles will help the managers in an organization identify what needs to be achieved in any situation. As a result of following the Prime Directive, Star Fleet showed a common face to the planets and civilizations it encountered. Organizations need to communicate their guiding principles and show consistency in order to avoid differences between their stated goals and the actions of their managers and staff.

Regardless of the situation, the *Star Trek* captains looked to their ships' technology and their crews to gather information before acting. Each ship had sensors to provide the captains with data about whatever ship or planet they encountered. The captains relied on their crews to interpret that data to provide the information needed to make decisions. While they often acted quickly, they did not act rashly. This is an important lesson for managers to follow. Managers should identify their information needs and determine what data is available for them to address those needs. All organizations have available data. The key is for managers to determine what is the most consistent and usable data. Managers should also identify the staff members who understand the data and can provide the best analysis of that data. Once managers receive the information they need, they should use it to make a decision that fits within the organization's guidelines to achieve the organization's goals and objectives.

Conclusion

Each of the *Star Trek* captains faced their own challenges with their own management styles. They all succeeded in inspiring their crews and getting the most from them in sometimes difficult situations. Project managers can learn from the captains and use some of their lessons to be successful. Whether it was dealing with a blow from an unseen force or finding a way home through uncharted space, the captains used their resources and abilities to solve problems and face challenges. The captains provided lessons to today's project managers on how to deal with difficult and changing situations. All of the captains used their resources and available information to make informed decisions to guide their ships. Managers can use similar techniques to lead their projects.◆

About the Authors

Paul Kimmerly has 19 years experience in software development for the different incarnations of the United States Marine Corps Technology Services Organization in Kansas City, Mo. A member of the Software Engineering Process Group (SEPG) since 1993, he has served as the group's chair for the past nine years. Kimmerly is an authorized Standard CMMI Assessment Method for Process Improvement Lead Appraiser. He presented at the 1997 and 2000 Software Engineering Symposiums and the 2004 National SEPG conference, and has contributed several articles on process improvement to CROSSTALK.

United States Marine Corps
TSO-KC/TKGB
1500 E 95th ST
Kansas City, MO 64197
Phone: (816) 926-5364
DSN: 465-5364
Fax: (816) 926-6969
DSN: 465-6969
E-mail: paul.j.kimmerly@dfas.mil

David R. Webb is a senior technical program manager for the 309th Software Maintenance Group at Hill Air Force Base, Utah, a CMMI Level 5 software organization. He is a project management and process improvement specialist with 19 years of technical, program management, and process improvement experience with Air Force software. Webb is a Software Engineering Institute-authorized instructor of the Personal Software Process℠, a Team Software Process launch coach, and has worked as an Air Force flight director, SEPG member, systems software engineer, lead software engineer, and test engineer. He is a frequent contributor to CROSSTALK and has a bachelor's degree in electrical and computer engineering from Brigham Young University.

309 SMXG/520 SMXS
7278 4th ST
Hill AFB, UT 84056
Phone: (801) 940-7005
Fax: (801) 775-3023
DSN: 775-3023
E-mail: david.webb@hill.af.mil